Abstract for the 22th General Assembly
of the European Geophysical Society,
Vienna, April 21-25, 1997

DUAL WAVELENGTH RAMAN LIDAR OBSERVATIONS OF TROPICAL CIRRUS CLOUDS DURING THE ALBATROSS CAMPAIGN 1996

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First results from lidar observations of tropical cirrus clouds above the Atlantic ocean during the ALBATROSS campaign (Atmospheric chemistry and lidar studies above the Atlantic ocean related to ozone and other trace gases in the tropo- and stratosphere) in October-November 1996 are presented. The measurements were performed aboard the German research vessel "POLARSTERN" between 35°N and 45°S. In the tropics cirrus clouds were frequently observed in the altitude range 12- 16 km. Between 23.5°N and 23.5°S in 44% of the observations maximum volume depolarizations exceeded 0,1; in the subtropics (23.5 30°S and 23.5 30°N) this percentage was only 11%. often several distinct layers could be distinguished within the cirrus cloud where the highest layers were reaching tropopause altitude. Based 011 the ratio of aerosol backscatter coefficients at wavelengths of 355 and 532 nm an estimate of the cirrus particle sizes is derived within the framework of Mie scattering theory. As Mie theory is based on the assumption of spherical particles the analysis is applied to measurements with aerosol depolarization less than 0.1 only. We find that the dependence of the ice water content (IWC) 011 temperature T can be parameterized by the linear fit $IWC = \exp(-32.35\text{-}1\ 0.114\ K^{-1} \cdot T)\ g/m^3$.

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